of the late M. Davidson.—J. **Guillaume**: Observations of the sun made at the Observatory of Lyons during the third quarter of 1911. Observations were made on seventy-four days, the results being summarised in three tables.—Henri **Bénard**: The formation of lunar craters according to the experiments of C. Dauzère. A reproduction is given of a photograph by C. Dauzère showing the appearance of a surface of beeswax after solidification, and the bearing of this upon the author's theory of the causes of lunar relief is discussed.—G. **Pick**: Parallel lines and translation, and differential geometry in non-Euclidean space. The results published by the author in a recent paper in the *Comptes rendus* were obtained by M. Fubini in 1900. —J. E. **Littlewood**: Some consequences of the hypothesis that the function $\zeta(s)$ of Riemann has no zero in the demi-plane $R(s)>\frac{1}{2}$.—G. **Cotty**: A class of quadratic forms with four variables connected with the transformation of Abelian functions.—J. **Tamarkine**: The problem of the transversal vibrations of a heterogeneous elastic rod.—Louis **Chaumont**: The construction and verification of a quarter-wave plate of mica.—Emmanuel **Legrand**: Testing metallic lamp filaments for resistance to shock. A detailed description of the testing apparatus is given.—Georges **Meslin**: The application of wireless telegraphy to the measurement of coefficients of self-induction. The method is distinguished from those in ordinary use in that it reduces to a length measurement a quantity (self-induction) which has the dimensions of a length.—Albert **Colson**: The theory of solutions compared with experiment. The case of nitrogen peroxide. The author regards the identification of the dissolved particle with the gaseous molecule as not proven, and considers the thermal changes actually occurring during the process of solution disprove the van't Hoff theory. Experimental determinations by a new method of the partial pressures on NO_2 and N_2O_4 are given.—M. **Barre**: Some double carbonates of calcium. A description of the carbonates

$$CaCO_3.Na_2CO_3.2H_2O \text{ and } CaCO_3.K_2CO_3,$$

and a study of the conditions under which they are formed. —E. **Léger**: The constitution of chrysophanic acid. This acid is shown to be dioxy-1 : 8-methyl-3-anthraquinone.—A. **Mouneyrat**: The toxicity of the compounds of arsenic employed in therapeutics. For equal weights of the arsenic compound, the danger is greater the shorter the time between successive injections. The experiments were carried out on rabbits, and it was found that the animals showed varying degrees of tolerance to the drug.—A. **Guilliermond**: The leucoplasts of *Phajus grandifolius* and their identification with mitochondria.—François **Kövessi**: The influence of electricity (direct current) on the development of plants. The experiments were chiefly carried out with wheat, and show that the current is harmful to the germination of the seed and to the development of the plant.—Marin **Molliard**: Is humus a direct source of carbon for the higher green plants? If humus can be assimilated directly by green plants, it must be in very small proportions.—Louis **Ammann**: A comparison of the results obtained by maceration and diffusion in beetroot distilleries in agricultural centres. Both methods extract the sugar equally well; the maceration process requires less skilled supervision than the diffusion process, but the latter has the advantages of rapidity and of requiring less liquid.—A. **Marie** and Léon **MacAuliffe**: The morphology of French assassins, suicides, and murderers.—Marcel **Baudouin**: The wear of the teeth of the first and second dentition of men of the Neolithic period is due to earth-eating.—L. A. **Pelous**: The relations between the phenomena of osmosis and the electric discharge. The osmotic pressure is increased by the silent discharge.—A. **Magnan**: The surface of the intestine in mammals.—A. **Comte**: Variation in the moths of *Bombyx mori*.—M. **Trabut**: A disease of the date palm, khamedj, or rotting of the fruit bunch. The disease is due to a parasite, identified as *Phoenicococcus marlatti*.

MELBOURNE.

Royal Society of Victoria, December 14, 1911.—Prof. E. W. Skeats in the chair.—Olive B. **Davies**: The anatomy of the slug *Cystopelta petterdi*, var. *purpurea*. The structure was examined by dissections and by serial sections.—Janet W. **Raff**: Protozoa parasitic in the large intestine of Australian frogs, part ii. *Opalina tenius*, *O. dorsalis*, *O. acuta*, *Entamoeba morula* are described as new.—R. J. A. **Berry** and A. W. D. **Robertson**: Dioptrographic tracings in three normæ of ninety Australian aboriginal crania.—W. **Lowe**: The tropics and pigment. Pigment prevents the entrance of actinic rays, transforms them to heat, which indirectly stimulates the sweat glands and is dissipated.—N. **Macdonald**: Machine-drawn *versus* hand-drawn milk. With proper precautions as to cleanliness, the machine does no harm either to the milk or the cow.—A. J. **Ewart**: Bitter pit and the sensitivity of apples to poison. Ripe pulp cells of apples are extremely sensitive to poison. One part in ten thousand million of mercuric chloride is toxic. Poison can enter the sound fruit only by the breathing pores, and on doing so will produce bitter pit. Copper and lead are less poisonous than mercury. The poisonous action of copper sulphate and other similar metallic salts may be decreased by adding substances which decrease the percentage of free ions. Fungicides will kill the apple long before they kill the fungus.—J. A. **Gilruth** and L. B. **Bull**: Enteritis associated with infection of the intestinal wall by cyst-forming protozoa (Neosporidia) occurring in certain native animals (wallaby, kangaroo, and wombat). Wallaby, *Sarcocystis macropodi*, situated in submucosa; kangaroo, *Ileocystis macropodi*, situated in mucosa, apparently an epithelial infection, and *Lymphocystis macropodi*, apparently a mononuclear infection; wombat, *Ileocystis wombati*, epithelial infection.—K. A. **Mickle**: Flotation of minerals, part ii. Oil attachments. Sulphides adsorb oil more readily than does gangue in acid solutions. Finely divided sulphides in acidulated water attach the oil to form only plastic magma. After this additional oil attachments are unstable; with less oil, less coherent magma is formed, practically non-coherent with 0·1 per cent. oil. Gas attachments. Gas collected from finely divided dry sulphides *in vacuo* found to be CO_2 with smaller amounts N and O. This is probably present as adsorbed film. Gas collected from flotation product *in vacuo* consists of CO_2 with varying amounts N and O. Gas disengaged from flotation scum on bubbles bursting is found to consist of CO_2 and nitrogen, with smaller amounts of oxygen.

BOOKS RECEIVED.

Four Place Tables of Logarithms and Trigonometric Functions. Compiled by E. V. Huntington. Unabridged edition. Pp. 33. (Cambridge, Mass.: Haward Co-operative Society; London: E. and F. N. Spon, Ltd.) 3*s*. net.

Cambridge County Geographies:—Midlothian. By A. McCallum. Pp. x+208+maps. Buckinghamshire. By Dr. A. M. Davies. Pp. xii+222+maps. Northamptonshire. By M. W. Brown. Pp. xii+225+maps. (Cambridge: University Press.) 1*s*. 6*d*. each.

Earth and her Children. By H. M. Livens. Pp. 248. (London: T. Fisher Unwin.) 5*s*. net.

The British Bird Book. Edited by F. B. Kirkman. Section VII. Pp. 194+plates. (London and Edinburgh: T. C. and E. C. Jack.) 10*s*. 6*d*. net.

Irises. By W. R. Dykes. Pp. xiv+110+8 coloured plates. (London and Edinburgh: T. C. and E. C. Jack.) 1*s*. 6*d*. net.

Prehistoric Parables. By W. Bell. Pp. vii+63. (Halifax: Milner and Co.) 1*s*. net.

Electro-analysis. By Prof. E. F. Smith. Fifth edition. Pp. xi+332. (London: Kegan Paul and Co., Ltd.) 10*s*. 6*d*. net.

Waves and Ripples in Water, Air, and Æther. By Prof. J. A. Fleming, F.R.S. Second edition. Pp. xii+299. (London: S.P.C.K.) 2*s*. 6*d*. net.

The Forest Trees of Britain. By the late Rev. C. A. Johns. Tenth edition. Revised by G. S. Boulger. Pp. xiv+431. (London: S.P.C.K.) 6*s*. net.

University of London. Francis Galton Laboratory for National Eugenics. Eugenics Laboratory Memoirs. XV. Treasury of Human Inheritance. Parts vii. and viii. Section XV. A: Dwarfism, by Dr. H. Rischbieth and A. Barrington. Pp. xi + 355–573 + Plates li.–lviii. + O–Z + A.A.–W.W. (London: Dulau and Co., Ltd.) 15*s*. net.

The Migration of Birds. By T. A. Coward. Pp. ix+137. Prehistoric Man. By Dr. W. L. H. Duckworth.

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Pp. viii+156. The Natural History of Clay. By A. B. Searle. Pp. viii+176. The Modern Locomotive. By C. E. Allen. Pp. ix+174. Earthworms and their Allies. By F. E. Beddard, F.R.S. Pp. vii+150. (Cambridge Manuals of Science and Literature.) (Cambridge: University Press.) 1*s.* net each.

Micropetrology for Beginners. By J. E. W. Rhodes. Pp. xv+126. (London: Longmans and Co.) 2*s.* 6*d.* net.

National Insurance. By A. S. Comyns Carr, W. H. S. Garnett, and J. H. Taylor, with a Preface by the Rt. Hon. D. Lloyd George, M.P. Pp. xxx+504. (London: Macmillan and Co., Ltd.) 6*s.* net.

Siam: a Handbook of Practical, Commercial, and Political Information. By A. W. Graham. Pp. xvi+637. (London: A. Moring, Ltd.) 10*s.* 6*d.* net.

Lessons in Geometry. By Dr. C. McLeod. Part i. Pp. xii+212. (Aberdeen: University Press.) 2*s.* 6*d.* net.

La Pila Elettrica. By A. Astolfoni. Pp. xv+297. (Milan: U. Hoepli.) 3 lira.

On the Mesozoic Rocks in some of the Coal Explorations in Kent (Memoirs of the Geological Survey, England and Wales). By G. W. Lamplugh, F.R.S., and Dr. F. L. Kitchin. Pp. vi+212. (London: H.M. Stationery Office; E. Stanford, and others.) 3*s.* 6*d.*

Wimbledon Common, its Geology, Antiquities, and Natural History. By W. Johnson. Pp. 304. (London: T. Fisher Unwin.) 5*s.* net.

Theorie und Praxis der Grossgasindustrie. By R. Mewes. i. Band, i. Hälfte. Pp. xx+403. (Leipzig: H. A. L. Degener; London: Williams and Norgate.) 18*s.* net.

The Natural History of the Bible. By the late Dr. H. B. Tristram. Tenth edition. Pp. viii+520. (London: S.P.C.K.) 5*s.*

Outlines of General Chemistry. By Prof. W. Ostwald. Translated, with the author's sanction, by Dr. W. W. Taylor. Third edition. Pp. vi+596. (London: Macmillan and Co., Ltd.) 17*s.* net.

DIARY OF SOCIETIES.

THURSDAY, February 15.

Royal Society, at 4.30.—An Alleged Specific Instance of the Transmission of acquired Characters—Investigation and Criticism: Dr. T. G. Brown.—Further Experiments on the Cross-breeding of two Races of the Moth *Acidalia virguplaria*: W. B. Alexander.—On the Effects of Castration and Ovariotomy upon Sheep: F. H. A. Marshall.—The Causes and Prevention of Miners' Nystagmus: Dr. T. L. Llewellyn.—The Stomatograph: W. L. Balls.—Composition of the Blood Gases during the Respiration of Oxygen: G. A. Buckmaster and J. A. Gardner.

Royal Geographical Society, at 5.30.—Desert of North Africa: Captain H. G. Lyons, F.R.S.

Institution of Mining and Metallurgy, at 8.—On the Theory of Blast-Roasting of Galena: C. O. Bannister.—Quick Combination Methods in Smelter Assays: A. T. French.—A Graphic Method of Illustrating the Results of Extraction Tests: H. K. Picard.

Linnean Society, at 8.—An Investigation of the Seedling Structure in the Leguminosæ: R. H. Compton.

FRIDAY, February 16.

Royal Institution, at 9.—The Road: Past, Present and Future: Sir John H. A. Macdonald, K.C.B., F.R.S.

Institution of Mechanical Engineers, at 8.—Annual General Meeting.

Institution of Civil Engineers, at 8.—Works for the Prevention of Coast-erosion: W. T. Douglass.

Geological Society, at 8.—Anniversary Meeting.

MONDAY, February 19.

Royal Society of Arts, at 8.—The Meat Industry. The Pig and its Products: Loudon M. Douglas.

Victoria Institute, at 4.30.—The Real Personality or Transcendental Ego: S. T. Klein.

TUESDAY, February 20.

Royal Institution, at 3.—The Study of Genetics: Prof. W. Bateson, F.R.S.

Royal Statistical Society, at 5.—The Rate of Discount and the Price of Consols: T. T. Williams.—The Rate of Interest since 1844: R. A. Macdonald.

Zoological Society, at 8.30.—Notes on Age-determination in Scales of Salmonoids, with special reference to Wye Salmon: Dr. A. T. Masterman.—Studies on Pearl Oysters. I. The Structure of the Shell and Pearls of the Ceylon Pearl Oyster (*Margaritifera vulgaris*, Schumacher), with an examination of the Cestode Theory of Pearl Production: Dr. H. Lyster Jameson.—Mimicry amongst the Blattidæ; with a Revision of the Genus *Prosoplecta*, Sauss: Robert Shelford.—Contributions to the Knowledge of the Spiders and other Arachnids of Switzerland: Rev. O. Pickard-Cambridge, F.R.S.

Royal Anthropological Institute, at 8.15.—Further Cave Explorations in Gibraltar in September, 1911: Dr. W. L. H. Duckworth.—On Some Prehistoric Monuments in the Departments Gard and Bouches du Rhone: A. L. Lewis.

Institution of Civil Engineers, at 8.—Some Features of the West African Government Railways: F. Shelford.

Illuminating Engineering Society, at 8.—Discussion on Shoplighting: Papers by N. W. Prangnell and A. E. Broadberry.

WEDNESDAY, February 21.

Royal Society of Arts, at 8.—The British Silk Industry and its Development since 1903: F. Warner.

Royal Microscopical Society, at 8.—Fourth List of New Species of Rotifera since 1889: C. F. Rousselet.—On the Colouring of Lantern Slides, with Illustrations on the Screen: E. J. Spitta.

Royal Meteorological Society, at 7.30.—The Thunderstorms of May 31, 1911: J. Fairgrieve.—The Thunderstorms of July 29, 1911: R. G. K. Lempfert.—The Drosometer, or Measurer of Dew: Sidney Skinner.

THURSDAY, February 22.

Royal Society, at 4.30.—Bakerian Lecture: The Variation of the Specific Heat of Water investigated by the Continuous Mixture Method: Prof. H. L. Callendar, F.R.S.—*Probable Papers:* Index to Reports of Physical Observations—Electric, Magnetic, Meteorological, Seismological—made at Kew Observatory: Dr. C. Chree, F.R.S.—On the Velocities of Ions in Dried Gases: R. T. Lattey and H. T. Tizard.—The Observation by means of a String Electrometer of Fluctuations in the Ionisation produced by γ Rays: Prof. T. H. Laby and P. W. Burbidge.—The Wave Problem of Cauchy and Poisson for Liquid of Finite Depth and for Slightly Compressible Liquid: F. B. Pidduck.

Institution of Electrical Engineers, at 8.—The Supply and Transmission of Power in Self-contained Road Vehicles and Locomotives: J. C. Macfarlane and H. Burge.

FRIDAY, February 23.

Royal Institution, at 9.—The Gyrostatic Compass and Practical Applications of Gyrostats: George K. B. Elphinstone.

Physical Society, at 5.—A Method of Accurate Comparison of Quantities of Radium: Prof. E. Rutherford, F.R.S., and Mr. Chadwick.—The Absorption of the γ-rays by Gases; Mr. Chadwick.—On Wave-form Sifters for Alternating Currents: A. Campbell.

Institution of Civil Engineers, at 8.—Works for the Prevention of Coast-erosion: W. T. Douglass.

SATURDAY, February 24.

Royal Institution, at 3.—Molecular Physics: Sir J. J. Thomson, F.R.S

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